MIL'VIDSKIY, M.G.; GOLOVIN, B.I.

Shape of the crystallization boundary in semiconductor single crystals grown from the melt by Czochralsky's method. Fiz.tver.tela 3 no.4: 1015-1018 Ap '61. (MIRA 14:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti, Moskva.
(Semiconductors) (Crystals—Growth)

GOLOVIN, B.

SCIENCE

PERIODICALS: ~~ACTA ZOOLOGICA. Vol. 3, No4, 1955~~
MAGYAR FIZIKAL FOLYOIRAT. Vol. 3, no. 4, 1955.

Golovin, B. Elastic scattering of neutrons on 300-Mev energy neutrons. Tr. from the Russians. p. 433

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 2
February 1959, Unclass.

DZHELEPOV, V.P.; KAZARINOV, Yu.M.; GOLOVIN, B.M.; FLYAGIN, B.V.

Experimental investigation of neutron-nucleon and neutron-deuteron interactions in the 380--590 Mev energy range. Izv.AN SSSR Ser.fiz. 19 no.5:573-588 S-O '55. (MLRA 9:4)

1.Institut yadernykh problem Akademii nauk SSSR.
(Cosmic rays) (Nuclear physics)

USSR/Nuclear Physics - Cross sections FD-2974

Card 1/1 Pub. 146 - 15/28

Author : Dmhelepov, V. P.; Satarov, V. I.; Golovin, B. M.

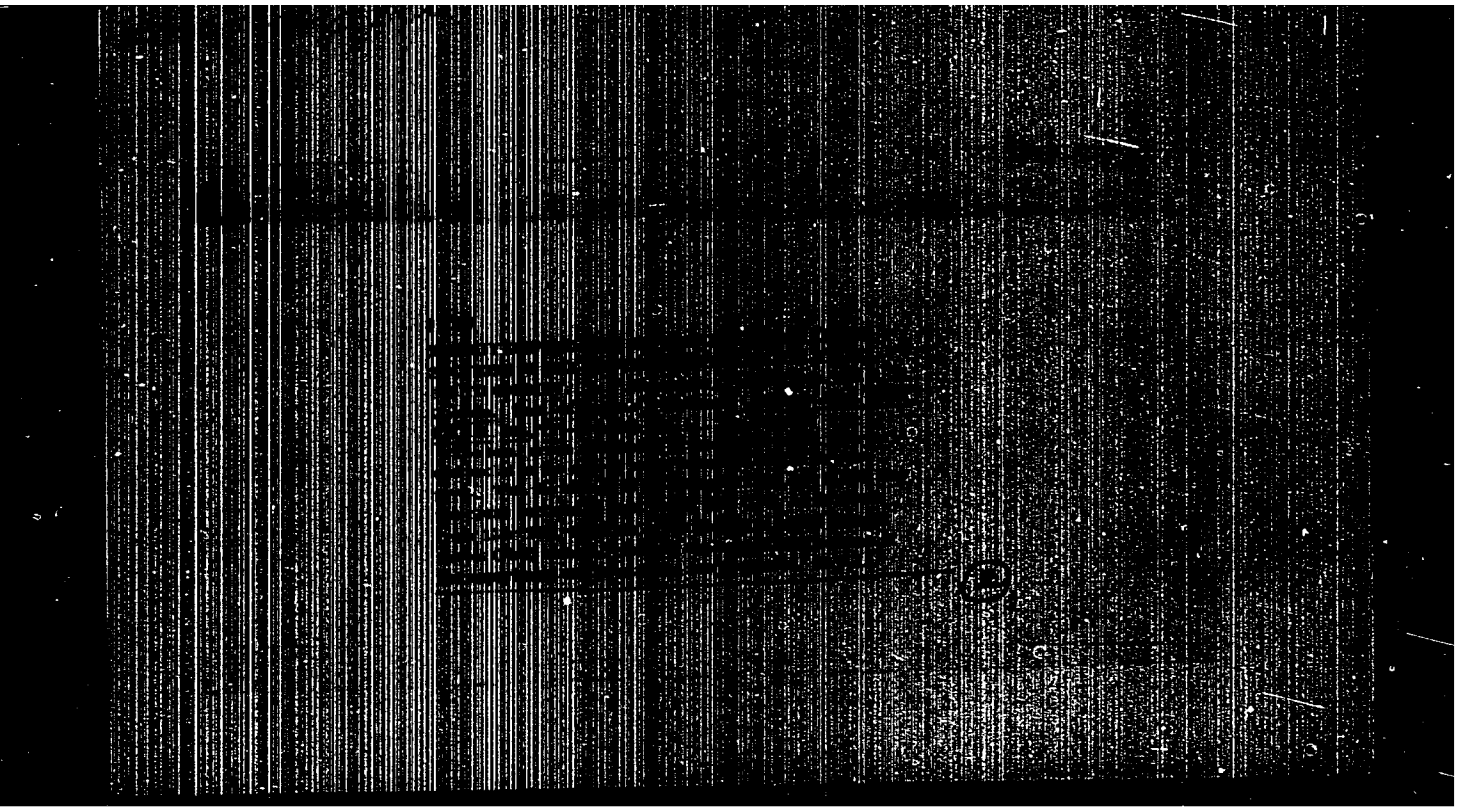
Title : Letter to the editor. Full cross section of certain elements for neutrons with energy 590 Mev

Periodical : Zhur. eksp. i teor. fiz., 29, September 1955, 369-371

Abstract : The synchrocyclotron of the Institute of Nuclear Problems, Academy of Sciences USSR, was used to carry out experiments on the determination of full cross sections of interaction with protons, deuterons, and more complex nuclei of neutrons having a mean effective energy of 590 Mev; the neutrons were obtained as a result of "overcharge" [perezaryadka] on beryllium by protons accelerated to an energy of 680 Mev, and the method of emission [vybyvaniye] of neutrons from a beam was employed for measuring the indicated cross sections. The author describes the general scheme involving concrete shield, collimator, Be target, telescope, Bi chamber, telescope detector, filter, scatterer, and proton (680 Mev) source. He gives indicated values for H, D, D-H, Be, C, O, Al, Cu, Sn, W, Pb, U. He remarks that the observed increase in the full cross sections of light-weight nuclei with increase in neutron energy from 400 to 590 Mev is successfully explained by the increase in the cross sections of elementary nucleon-nucleon interactions in the indicated range. Nine ref.

Institution : Institute of Nuclear Problems, Academy of Sciences USSR

Submitted : May 30, 1955



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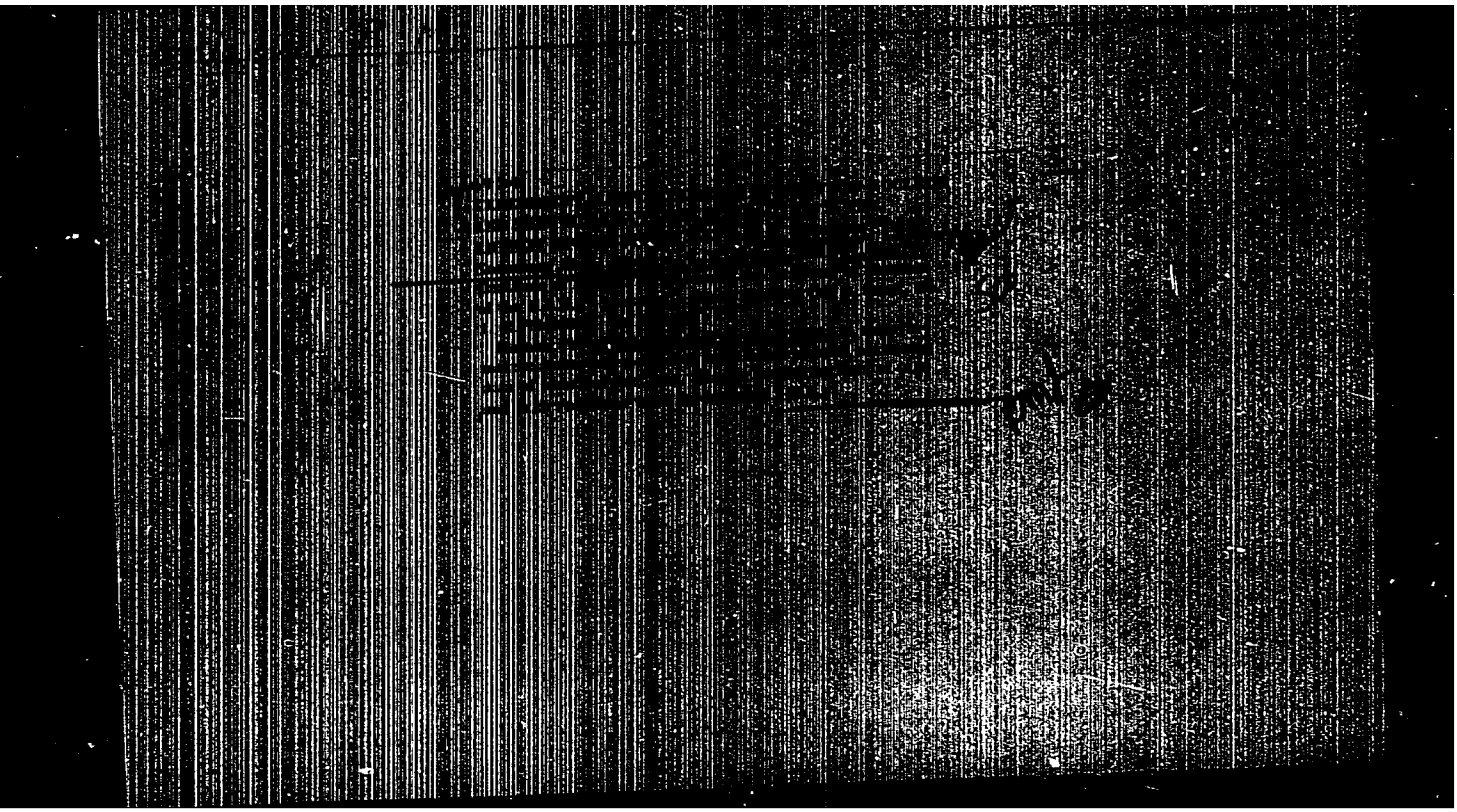
GOLOVIN, B.M., DUBLEPOV, V.P., KAZARINOV, UM, and SIMONOV, U.N.

Elastic scattering of 580 MeV neutrons by protons and neutrons (II/46)

CERN-Symposium on High Energy Accelerators and Pion Physics.

Geneva, 11-23 June 56
In. Branch #5



APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810020-9"

GOLOVIN, B.M.

CARD 1 / 6 PA - 1453

SUBJECT USSR / PHYSICS
AUTHOR BIRJUKOV,V.A., GOLOVIN,B.M., LAPIDUS,L.I.
TITLE The All-Soviet Conference on the Physics of Particles with High Energies.
PERIODICAL Atomnaja Energija, 1, fasc.4, 158-165 (1956)
Issued: 10 / 1956 reviewed: 10 / 1956

This conference was held by the Department for Physical and Mathematical Sciences of the Academy of Science in the USSR at Moscow with the participation of more than 1000 engineers and physicists of many laboratories and institutes of the Soviet Union and about 60 foreign scientists. The conference began its work on May 14th with a plenary session. On this occasion M.G.MEŠČERJAKOV stressed the necessity of the cooperation of scientists of various countries in working out the most important problems of the physics of elementary particles.
The first lecture was delivered by A.L.MINC on the construction, the most important data, and the experience made with the operation of the synchrocyclotron of the Institute for Nuclear Problems which had recently been transferred to the United Institute for Nuclear Research. This accelerator, the magnetic poles of which had a diameter of 5 m, was put into operation in 1949 after a short period of construction. It was used for the acceleration of deuterons and α-particles, and in 1950 500 MeV protons were obtained. By reconstruction (1953) the diameter of the magnetic poles was increased to 6 m and proton energy to 680 m.

Atomnaja Energija, 1, fasc. 4, 158-165 (1956) CARD 2 / 8 PA - 1453

V.I. VEKSLER gave a report on the synchrophasotron for 10-BeV-protons of the electrophysical Institute. Also this apparatus has been transferred to the United Institute, being destined for the investigation of the nature of nuclear forces, the properties of mesons, hyperons, antiprotons, etc. V.V.VLADIMIRSKIJ reported on projected proton synchrotrons for 6-7 BeV and 50-60 BeV with hard focussing. Such devices are not yet in operation but are already under construction, above all in the USSR, in the USA, and in Switzerland. The meeting was closed after a lecture delivered by J. (or G. ?) MARSHALL (USA) on the project of building a proton synchrotron for 15 BeV.

In the course of the following days the conference carried out its work in 3 sections: 1.) Elementary particles and their interactions. 2.) Accelerators for elementary particles. 3.) Theoretical work concerning the physics of particles of high energy.
The first meeting of the department "Accelerators" was devoted to the problem of accelerators of the cyclotron type. At first V.P.DMITRIEVSKIJ and V.I.DANILOV delivered a report on the work performed by the Institute for Nuclear Problems in connection with the releasing of the bundle from the 6 m - synchrocyclotron and on the increase of the density of the released proton bundle. CH. TIREN (Sweden) delivered a report on a subterranean synchrocyclotron for 185 MeV. I.CH.NEVAŽSKIJ dealt with some special features of the high frequency system of the six meter phasotron, and Prof. BAKER spoke about the system of frequency modulation of the Swiss 600 MeV synchrocyclotron.

Other lectures dealt with individual lectures delivered on the theory of the motion of particles in accelerators. In the course of the two following meetings of the department for accelerators, M.S.RABINOVIČ, E.G.KOMAR, S.M.RUBČINSKIJ, I.F.MALYŠEV, N.A.MONOSZON and others reported on the physical bases of the 10 BeV synchrocyclotron and on its individual components.

Many interesting lectures were delivered in the course of meetings concerning electron accelerators. V.D.RUSANOV, JU.N.LOBANOV and M.SEIDL (the latter from Czechoslovakia) spoke about experimental investigations of the capture of electrons on the occasion of a betatron-like operation of the accelerators, and, besides, several problems connected with the motion of electrons in the accelerators were dealt with.

In a special meeting the special features and the economic coefficients of linear accelerators were dealt with by Soviet and foreign specialists.

Furthermore, also the accelerators with hard focussing were dealt with in the course of this session. Prof. REGENSTREIF (Geneva) gave a report on the 25-BeV synchrotron under construction in Geneva.

Special attention was attracted by lectures on new methods of acceleration. M.OLIPHANT (Australia) gave a report on the construction of the first proton synchrotron for 10 BeV, in which the strong magnetic fields (of up to 80.000 oersted) are generated without the help of iron nuclei. G.I.BUDKER lectured on the generation of large magnetic fields and on the original idea of producing a closed stabilized electron bundle. A.A.KOLOMENSKIJ spoke about the

construction of annular accelerators with constant circulation frequency of the particles.

The last session of this department was devoted to the study of various experimental methods.

Department of "Elementary Particles and their Interaction". The first session dealt with problems connected with the production of pions by nucleons. Reports were delivered by M.G.MEŠČERJAKOV et al. on the study of the spectra of pions, nucleons and deuterons created on the occasion of (pp)-collisions and of the bombardment of Be-nuclei with protons, L.RIDDIFORD (England) dealt with the (pp)-interaction at 650 MeV, JU.D.BAJUKOV et al. on the production of π^0-mesons on the occasion of collisions of protons and neutrons of high energy with protons, deuterons, and with nuclei of different elements, P.MARSHAK (USA) on some results obtained by tests concerning the production of pions on a nucleus with the isotopic spin zero, (Li^6), L.SMITH (USA) on the interaction between protons and protons within the energy range 1 to 3 BeV, S.Z.BELEN'KIJ on the interaction between mesons and nucleons, E. SEGRÉ on the interaction between mesons and nucleons, and on the discovery of the antiproton. (According to I.JA.POMERANČUK (who spoke in the discussion), a system consisting only of protons is produced on the occasion of the annihilation of antiprotons on the nucleons). JA.A.SMORODINSKIJ spoke about the scattering of nucleons by nucleons (survey of experimental data), O.CHAMBERLAIN (USA) on the scattering of polarized protons, and V.P.DŽELEPOV on (n,p) and (n,n) scattering at a neutron energy of from 580 to 590 MeV,

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measuring total cross sections and cross sections of the nonelastic scattering of neutrons and protons by nuclei, EL-NADI: the applicability of BORN'S approximation to such reactions in which the inciding nucleon captures two nucleons of the nucleus, K.A.TER-MARTIOSJAN: the elastic and nonelastic scattering of neutrons and deuterons of high energy by longitudinal semi-transparent nuclei, N.A.PERFILOV: the emission of fragments with $Z \geq 4$ on the occasion of the destruction of the cores of the emulsion by protons, J. (or G?) FILBER: the interaction of 1 BeV-protons with the nuclei of the photo emulsion, A.M.BALDIN: the problems connected with photonuclear reactions, N.G.SEMAŠKO: the photoproduction of slow pions on complicated nuclei, A.A.ABRIKOSOV: some quantum-electric effects at high energies, P.PANOVSKIJ (USA): the multiple photoproduction of pions in hydrogen, the photoproduction of myon couples, the direct production of mesons by electrons, and bremsstrahlung at high energies, B.M.PONTEKORVO: the tests undertaken for the discovery of a nuclear interaction connected with the exchange of meson pairs, N.B.DELONE, V.S.ROGANOV and P.WILSON (USA): various problems connected with the photo fission of the deuteron, M.I.ADANOVIC: th photoproduction of pions on deuterons, A.N.GORBUNOV: experiments concerning the photospallation (photofission ?) of the helium nuclei at high energies. The last session of the department "Elementary Particles" dealt with the proulem

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L.I.LAPIDUS on new possibilities of the phase analysis of the data of (n,p)-scattering, P.MARSHAK (USA), E.KLEMENTEL (?) (Italy) and L.RIDDIFORD (England) on the elastic scattering of protons and neutrons by neutrons, various authors dealt with the scattering of nucleons, particularly with (p,p) scattering at 660 MeV and from 1 to 3 BeV.
A further session devoted its attention to the interaction of pions with nucleons and nuclei. Further problems were dealt with by the following authors: N.A.MITIN and I.V.SOKOLOVA: the scattering of π^+-mesons by nucleons and the phase analysis of this process, E.KLEMENTEL (?) (Italy): the same problem, P.MARSHAK: the scattering of pions with low energy by protons, K.BRJUKNER (BRUECKNER ?): the total cross sections of the interaction of pions with nucleons at high energies, P.M.SULJAEV, N.I.PETROV and A.E.IGNATENKO: the interaction of π^--mesons (330 MeV) with an He^4-nucleus, V.V.KRIVICKIJ: the production of π^--mesons in carbon by 308 MeV-π^--mesons, G.D.STOLETOV: polarization on the occasion of the scattering of 660-MeV-protons by beryllium nuclei, P.MARSHAK: polarisation on the occasion of the scattering of protons by protons, I.I.LEVINTOV: the determination of the ratio of the real parts of the spin-orbit- and of the central potential of the interaction between nucleons with nuclei, N.A. GULIEV: the polarization occurring on the occasion of the scattering of nucleons by nuclei, L.ROSENFELD (England): the possibilities offered by the nuclear scattering of fast particles to the study of nuclear structure, M.Levi: the scattering of 550-MeV electrons by protons and deuterons, V.I.MOSKALEV:

of new particles. The following topics were dealt with: A.I.ALICHANJAN: experiments undertaken with a mass spectrometer in connection with two WILSON chambers, V.A.LJUBIMOV: measuring the spectrum of K-mesons in an altitude of 3200 m, L.SMIT (SMITH): experiments carried out with a cosmotron in the course of which cases of a simultaneous production of Λ - and Θ-particles were sought, WAN-GAN-ČAN (Red China): the study of heavy mesons and hyperons at an altitude of 3185 m by means of a WILSON chamber, B.S.NEGANOV: the possibility of considering a nucleon as a system composed of a hyperon and a K-particle, G. STEINBERGER (USA): the production of "strange" particles by 1,3 MeV-pions in hydrogen, P.PEIERLS (England): "hypernuclei", i.e. nuclear systems containing bound hyperons, (N.N.KOLESNIKOV discussed similar problems in the theoretical department).

Theoretical Department: In the course of official and inofficial sessions (the latter were organized after the Conference had already begun) the following authors dealt with the following subjects: Soviet theoreticians and their foreign guests dealt with the works by L.D.LANDAU and his collaborators. quantum dynamics and the theory of fields, I.E.TAMM, I.JA.POMERANČUK, K.BRJUKNER (BRUECKNER), M.LEVI: the present state of development of the meson theory, I.JA.POMERANČUK expressed his opinion that the consistent investigation of quantum electrodynamics and of the meson theory leads to the conclusion that the renormalized charge of the electron and the renormalized meson charge are equal to zero. This would enforce entirely new ideas. I.E.TAMM also stressed

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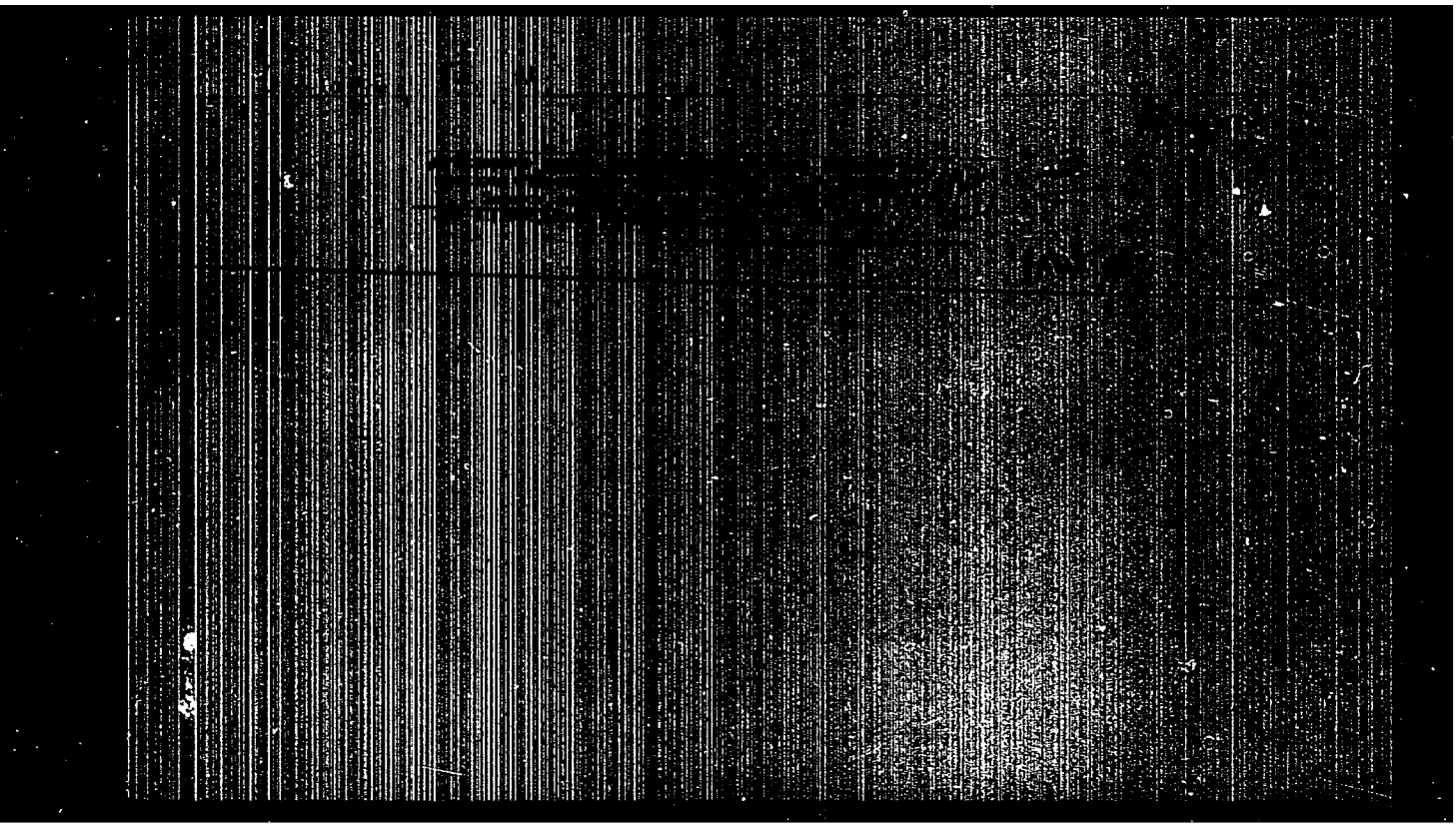
the necessity of a revision of the bases of the present quantum theory, M.K.POLIVANOV gave a report on the application of the causality condition to problems of scattering, V.JA. FAJNBERG and V.Z.BLANK spoke about a dispersion relation on the occasion of the scattering of nucleons on nucleons, E.S.FRADKIN and B.L.IOFFE on a dispersion relation on the occasion of the scattering of mesons on nucleons, B.L.IOFFE and B.M.STEPANOV on a dispersion relation on the occasion of the photoproduction of pions on nucleons. In the course of the final session Prof. CU (Red China) spoke about a possible model in the theory of elementary particles which contain the theories of FERMI-YANG and HEISENBERG as special cases. The successes achieved by young research scientists were considerable.

INSTITUTION:



APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810020-9"

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1535
AUTHOR GOLOVIN, B.M., DŽELEPOV, V.P.
TITLE The Investigation of the Elastic Scattering of 590 MeV-Neutrons by Neutrons.
PERIODICAL Žurn. eksp. i teor. fis, 31, fasc. 2, 194-201 (1956)
Issued: 5.10.1956

Experiments were carried out by means of the synchrocyclotron of the Institute for Nuclear Problems of the Academy of Science in the USSR. At first the cross sections of (n-d)-scattering in nonrelativistic momentum approximation were computed.

The cross sections of (n-n)-scattering were determined by the comparison of the yields of (n-d)- and (n-p)-collision (at the same angle with respect to the neutron bundle). The neutrons scattered by D_2O, H_2O, CH_2 and C were registered by means of a neutron telescope. Measuring was carried out at scattering angles of from 30° to 90°.

Results and discussion: As the data obtained by experiments with a proton bundle and the results of the aforementioned computations are indications in favor of the additivity of (n-d)-scattering at the energies $E_n \gtrsim 400$ MeV and at scattering angles of $30^\circ \leqslant \vartheta \leqslant 90^\circ$, the cross sections $S(\vartheta)$ found here at 500 MeV are identical with the cross sections of the elastic scattering of neutrons by free neutrons. (n-n)-scattering becomes highly anisotropic on the occasion of the transition from 300 to 590 MeV (similar to p-p-scattering). The ratio $\sigma_{nn}(30^\circ)/$

Zurn.eksp.i teor.fis,31,fasc.2, 194-201 (1956) CARD 2 / 2 PA - 1535

$\sigma_{nn}(90^{0})$ increases on the occasion of transition from 300 to 590 MeV from 1 to 2,3. This is indicative of an increased influence exercised by the interaction of nucleons in states with high values of the angular momentum. Anisotropy might also be due to the considerable increase of the elastic (n-n)-interaction on the occasion of transition from 300 to 590 MeV. Within the entire domain of scattering angles investigated the differential cross sections of (n-n)-scattering at 590 MeV are, within the limits of measuring errors, identical with the corresponding cross sections of (p-p)-scattering. This is direct proof of the charge symmetry of nuclear forces at high energies, which is also confirmed by the equality of the total cross sections of (n-d)- and (p-d) interaction at high energies. All known facts connected with purely nuclear (p-p)-interaction thus hold good also in the case of (n-n)-interaction. Also the comparison of the differential cross sections of elastic (n-p)-scattering (at 580 MeV) with the cross sections of (p-p)-scattering does not contradict the fact that nuclear forces are independent of charge.

INSTITUTION: Institute for Nuclear Problems of the Academy of Science in the USSR.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810020-9"

GOLOVIN, B.M., DZHELEPOV, V.P., KAZARINOV, Yu. M., SEMENOV, N.N.

"Elastic Scattering of 580 MeV Neutrons by Protons and Neutrons," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No1 1, pp. 21-30, 1957

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21.5300 SOV/120-59-5-6/46

AUTHORS: Golovin, B. M., Dzhelepov, V. P., Katyshev, Yu. V., Konin, A.D. and Medved', S.V.

TITLE: A Ring Target Apparatus for Studying High-energy Small-angle Neutron Scattering

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 5, pp 33-35 (USSR)

ABSTRACT: The authors have measured n,p cross-sections in the small-angle range (35° - 5° centre of mass system) at ~600 MeV (Ref 1). The method used consists in the following. To begin with a high-energy neutron beam is produced with the aid of an annular brass collimator, as shown on the left-hand side of Fig 1. The beam is then incident on a toroidal circular target whose central axis coincides with the longitudinal axis of the beam. The neutron detector is in the form of a neutron telescope and can be moved along the symmetry axis of the apparatus. The use of a ring target means that it is possible to use a larger amount of scattering material than in the usual targets. The neutrons are produced by 680 MeV protons at an internal target of the synchrocyclotron of the Laboratory for Nuclear Problems of the Joint Institute for

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SOV/120-59-5-6/46

A Ring Target Apparatus for Studying High-energy Small-angle Neutron Scattering

Nuclear Studies. The neutrons scattered by the ring target are recorded by a neutron telescope consisting of five scintillation counters and a converter. Charge exchange protons formed in the converter are recorded by the counters 1, 2, 3 and 4 (Fig 1) placed after the converter and connected in coincidence. In order to exclude charged particles which are not due to charge exchange in the converter, an additional counter 5 is placed in front of the converter and is in coincidence with counters 2, 3 and 4 (CC-2). This scheme is in anti-coincidence with CC-1. The converter is in the form of an aluminium cylinder 4 cm in diameter and 6 cm high. The angular resolution in the lab system is $\pm$ 2° at 15° and $\pm$ 0.25° at 2°. I. G. Dragunov and V.S.Turchenev are thanked for their assistance in building the apparatus. There are 1 figure, 1 table and 3 Soviet references.

Card2/2

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Studies)

SUBMITTED: September 2, 1958

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APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515810020-9"

21(10)

AUTHORS: Golowin, B. M., Dzhelepov, V. P., Nadeshdin, V. S., Satarov, V. I. SOV/56-36-2-13/63

TITLE: On the Possible Sets of Experiments for the Simultaneous Analysis of Data Concerning Nucleon-Nucleon Scattering and Polarization in p-n Collisions at Energies of 635 Mev (O vozmozhnykh naborakh opytov dlya sovmestnogo analiza dannykh po nuklon-nuklonnomu rasseyaniyu i polyarizatsiya v p-n-soudareniyakh pri energii 635 MeV)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 2, pp 433-443 (USSR)

ABSTRACT: The results obtained by all investigations of nucleon-nucleon scattering can be written down in form of various combinations of the 5 complex coefficients of the scattering amplitude. For the purpose of determining these 5 coefficients it is generally necessary to carry out 9 independent experiments. In dependence on various parameters (as e.g. nucleon energy) this number may increase or decrease. These conditions are discussed in the introduction. The suggestion is made as far as possible to reduce the number of experiments required to reconstruct the scattering amplitude by means of an analysis of the data

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On the Possible Sets of Experiments for the Simultaneous Analysis of Data Concerning Nucleon-Nucleon Scattering and Polarization in p-n Collisions at Energies of 635 Mev

SOV/56-36-2-13/63

concerning n-p (p-n) and p-p scattering carried out simultaneously. Existing possibilities are discussed in detail, and practical suggestions are given in 2 appendices to this paper. Also the possibility of using data obtained from p-d scattering is investigated. Furthermore, the results obtained by experimental investigations are described; by means of a device described schematically by figure 1 the polarization in p-n collisions was investigated. The research scientists worked with a polarized proton beam of the synchrocyclotron of the OIYaI (United Institute for Nuclear Research), which had an energy of (635 ± 15) Mev. At the target the beam had an intensity of $4 \cdot 10^5 sec^{-1}$ and a degree of polarization of $(58 \pm 3)\%$. The targets consisted of thin-walled plexiglass containers filled with heavy or ordinary water. The n-p scattering for $45^\circ \leq \vartheta \leq 145.7^\circ$ was investigated by recording the protons and neutrons by means of two telescopes connected in coincidence; for proton recording a telescope consisting of three counters with photomultiplier FEU-33 and plastic oscillators, and for recording neutrons a high-efficiency multiple-layer counter

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with liquid-scintillator was used (Ref 6). The results obtained by investigating the angular dependence of polarization in p-n scattering are shown by a table and by figure 2. The table contains the measured $(\epsilon + \Delta\epsilon)$- and $(P + \Delta P)$-values in % for 9 ϑ-values (in the center of mass system). The energy- and angular dependence of polarization for states (of the n-p system) with different isotopic spin is investigated, and these functions are found to depend also on the isotopic spin (T=0, T=1). $(PQ)_{T=1}$ increases with increasing energy, but $(PQ)_{T=0}$ decreases considerably (Figs 3 and 4). In appendix I systems of equations are given for certain forms of scattering amplitudes A_{pp} and A_{np}, with the aid of which suggestions are made in appendix II for experimental sets. The (explicit) equations concern the following basic experiments: 1) Elastic cross section. 2) Polarization in angular scattering. 3) Normal component of polarization relation. 4) Triple scattering in parallel planes (scattered particle). 5) Triple scattering in parallel planes (recoil particle). Polarization correlation in the case of scattering in two planes which are vertical to each

On the Possible Sets of Experiments for the Simultaneous Analysis of Data Concerning Nucleon-Nucleon Scattering and Polarization in p-n Collisions at Energies of 635 Mev

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other. 7) Rotation of the polarization vector (scattered particle). 8) Rotation of the polarization vector (recoil particle). 9) The influence exercised by the longitudinal component of incident beam of polarization upon transversal scattering (scattered particle). 10) The same for the recoil particle. In appendix XII several experimental sets are suggested and the formulae for analysis are given.
The authors in conclusion thank L. I. Lapidus, R. M. Ryndin, and Ya. A. Smorodinskiy for discussions. There are 4 figures, 1 table, and 20 references, 10 of which are Soviet.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (United Institute for Nuclear Research)

SUBMITTED: September 3, 1958

Card 4/4

21(7)

SOV/56-36-3-12/71

AUTHORS: Golovin, B. M., Dzhelepov, V. P., Katyshev, Yu. V., Konin, A. D., Medved', S. V.

TITLE: The Scattering of Neutrons by Protons in the Region of Small Angles at Neutron Energies of 590 Mev (Rasseyaniye neytronov protonami v oblasti malykh uglov pri energii neytronov 590 MeV)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 735-738 (USSR)

ABSTRACT: The authors investigated the differential cross section of n-p-scattering at an average neutron energy of 590 Mev in the angular range of 5 - 35°; for this purpose a special device with an anular scatterer was developed, which has already been described in one of the authors' earlier papers and is described in this paper (Fig 1). Results:

Scattering angle c.m.s.	Relative amount of n-p-scattering cross section	n-p-scattering cross section in 10^{-27} cm^2/steradian
5	2.7±0.4	10 ± 1.5
8	2.2±0.3	8.2±1.4
11.5	1.7±0.2	6.4±0.9

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The Scattering of Neutrons by Protons in the Region of Small Angles at Neutron Energies of 590 Mev

23	1.2 ± 0.1	4.3 ± 0.5
35	1	3.7 ± 0.2

Determination of coefficients in the amplitude equation of elastic nucleon-nucleon scattering $M = \alpha + \beta(\vec{\sigma}_1 + \vec{\sigma}_2)\vec{n} +$ $+ \gamma(\vec{\sigma}_1\vec{n})(\vec{\sigma}_2\vec{n}) + \delta(\vec{\sigma}_1\vec{I})(\vec{\sigma}_2\vec{I}) + (\vec{\sigma}_1\vec{m})(\vec{\sigma}_2\vec{m})$ is possible by means of experimental investigations. It holds that $\sigma(\vartheta = 0^\circ) = |\alpha|^2 + |\beta|^2 + |\delta|^2 + |\varepsilon|^2$ or $\mathrm{Im}\alpha(\vartheta = 0^\circ) = k\sigma_t(4\pi$, where k denotes the wave number of the incident nucleon. It holds that $\sigma(\vartheta = 0^\circ) - \left[\mathrm{Im}\alpha(\vartheta = 0^\circ)\right]^2 =$ $= |\mathrm{Re}\alpha|^2 + |\beta|^2 + |\delta|^2 + |\varepsilon|^2$ and by using the experimental results obtained by the authors it is found that $\sigma_{min}(\vartheta = 0^\circ) = \left[\mathrm{Im}\alpha_{np}(\vartheta = 0^\circ)\right]^2 = 5.8.10^{-27}\mathrm{cm}^2/\mathrm{steradian}$. Figure 2 shows the energy dependence of $\mathrm{Im}\alpha(\vartheta = 0^\circ)$ for nucleon-nucleon interaction in the states with isotopic spin T = 0 and T = 1 with an accuracy of $\sim 10\%$. Apart from a

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strong increase of cross sections with a decreasing scattering angle, there is a predominance of forward scattering cross sections over backward scattering cross sections. A comparison of the results obtained by means of the optical theorem shows that it is doubtful whether nucleon-nucleon scattering at $\sim$ 600 Mev can be described on the basis of the opaque nucleon model. There are 2 figures, 2 tables, and 11 references, 7 of which are Soviet.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Research)

SUBMITTED: September 3, 1958

Card 3/3

24 (3)

AUTHORS: Golovin, B. M., Kashukeyev, N. T., Fridkin, V. M. SOV/20-128-1-15/58

TITLE: The Role of the Field in the Formation of the Heterogeneous Charge of a Photoelectret

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 1, pp 63 - 66 (USSR)

ABSTRACT: The authors consider the role played by the field in the formation of the photoelectret state in a single crystal by substituting a term into the equations (1), (2), (3), of a previous paper by V. M. Fridkin (Ref 2). The term takes the current divergence into account. Thus, the following set of nonlinear equations is obtained which consider the variation with time of the electron density n within the range of conductivity, of the electron density N on the adhesion levels, and of the concentration P of the holes in the basic range when the crystal is illuminated and the field is applied:

$$\partial n/\partial t = d_1 + kN - \alpha nP - \beta n(M - N) - \partial(nu_1\mathcal{E} - D_1\partial n/dx)/dx$$

$$\partial N/\partial t = - kN + \beta n(M - N); \partial P/\partial t = d_1 - \alpha nP - \partial(Pu_2\mathcal{E} - D_2\partial P/\partial x)/\partial x$$

Instead of the neutrality condition P = N + n a conservation

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condition of the form $\int_0^l P dx = \int_0^l (N + n) dx$ is to be complied with. It is to be integrated over the crystal length in the direction of the applied field. In the above equations it holds: $d_1 = s_1 E$ and $k = s_2 E$, where E denotes light intensity. $\mathcal{E}$ denotes the electric field strength, u_1 and u_2 the mobility of the conductivity electron and the hole in the basic range, D_1 and D_2 the diffusion coefficients of electrons and holes. Additionally, the relations $\mathcal{E} = \mathcal{E}_1 - \mathcal{E}_o$, $\frac{\partial \mathcal{E}_1}{\partial x} = \frac{4\pi e}{\epsilon}$ (P-N-n) hold in this connection. The expression for the photoelectret charge $\sigma = (P-N-n)e$ may be obtained by the solution of the set of equations written down at the beginning. It depends on the time t and the coordinate x. The afore-mentioned set of equations is then transformed. Part I of this article deals with the validity of the law of exchangeability of the two possible processes of photoelectret formation as defined by the two above

sets. This law means that the photoelectret charge depends everywhere only on the strength of exposure $z = Et$: $\sigma = P - N - n = \sigma(z,x)$ for $0 \leq x \leq l$. A necessary condition for the validity of this law is the validity of the condition $n = n_0(z,x)E$. The conclusions drawn in this article allow for an interpretation of certain results of experiments on the establishment of the photoelectret state in anthracene single crystals. In Part II, the authors apply the transformed set of equations to the case in which the field $\mathcal{E}_1$ of space charges may be neglected with respect to the outer field $\mathcal{E}_0$. The authors thank G. Nadzhakov, Academician of the Bulgarian Academy of Sciences, Academician A. V. Shubnikov, and Professor V. P. Dzhelepov for their interest in the present article. There are 5 Soviet references.

The Role of the Field in the Formation of the Heterogeneous Charge of a Photoelectret SOV/20-128-1-15/58

ASSOCIATION: Institut kristallografii Akademii nauk SSSR (Institute of Crystallography of the Academy of Sciences, USSR). Institut fiziki Bolgarskoy Akademii nauk (Institute of Physics of the Bulgarian Academy of Sciences). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: May 6, 1959, by A. V. Shubnikov, Academician

SUBMITTED: May 4, 1959

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24.2600
~~24 (3), 23 (5)~~

AUTHORS: Golovin, B. M., Zheludev, I. S., Kashukeyev, N. T., Orlov, I. N., Fridkin, V. M., Mogilevskaya, L. Ya., Antonov, A. S.

57907
SOV/20-129-5-13/64

TITLE: A New Electrophotographic Process, Which May Be Realized by Means of Combined Electret Layers

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 5, pp 1008-1011 (USSR)

ABSTRACT: The present paper deals with a new electrophotographic process in which combined electret layers are used in addition to "memory properties". In 1955 Fridkin et al. (Ref 8) described electric photography by means of photoelectrets on the basis of the constant internal photoelectric polarization in dielectrics discovered by G. Nadzhakov (Ref 9). A layer of a photoelectric conductor with relatively high photosensitivity and relatively low inertia is applied to the semi-transparent electrode. The dark resistance of this layer may be very low. Onto the layer of the photoelectric conductor, a layer of a dielectric with stable dark-polarization is applied. The adjoint second electrode may then be opaque. The electrophotographic process is then realized as follows: A constant voltage is

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A New Electrophotographic Process, Which May Be Realized by Means of Combined Electret Layers

applied to the two electrodes. With $R_2 \gg R_3$ (R_2 dark resistance of the photoelectric conductor, R_3 - dark resistance of the dielectric) the voltage meeting the layer of the dielectric practically equals zero. Through the semi-transparent electrode an image is projected on to the surface of the photoelectric conductor. As a result of the internal photoelectric effect in the photoelectric conductor, the voltage in the corresponding exposed parts of the photoelectric conductor changes, and a stable electret state is then produced in the dielectric. The latent electrophotographic image may then be "read" by means of an electron beam. Ferroelectrics and thermoelectrets may be used as dielectrics. The characteristic curve of the combined electret layers may be determined by analyzing the kinetics of the photoelectric conductivity of the photoelectric conductor and of electret state formation. A law of mutual exchangeability of electrets is satisfied if the charge of the electret is a function of

A New Electrophotographic Process, Which May Be Realized by Means of Combined Electret Layers

$\int_0^{\tau} \mathcal{E}\,dt$ alone, where $\mathcal{E}$ denotes the field strength of the polarizing field and τ - the duration of polarization. The authors experimented with combined electret layers, in which cadmium sulfide (activated with copper and chlorine) were used as photoelectric conductors, and zinc sulfide (also activated with copper and chlorine) served as electret. A diagram shows the dependence of the charge of the ZnS-electret on the field strength of the polarizing field. In the interval under investigation this dependence is linear. The law of reciprocal exchangeability does not apply in the case of the combined electret layers investigated here. The authors thank Academician A. V. Shubnikov and Academician G. S. Nadzhakov for discussing the results obtained by the present paper. There are 3 figures and 17 references, 13 of which are Soviet.

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A New Electrophotographic Process, Which May Be Realized by Means of Combined Electret Layers

SOV/20-129-5-13/64

ASSOCIATION: Institut kristallografii Akademii nauk SSSR (Institute of Crystallography of the Academy of Sciences of the USSR). Institut fiziki Bolgarskoy Akademii nauk (Institute of Physics of the Bulgarian Academy of Sciences). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: July 15, 1959, by A. V. Shubnikov, Academician

SUBMITTED: July 9, 1959

Card 4/4

Golovin, B. M.

81893

S/181/60/002/05/37/041
B004/B056

24.7700

AUTHORS: Golovin, B. M., Kashukeyev, N. T., Orlov, I. N., Fridkin, V. M.

TITLE: The Photoelectric State in ZnS and Two New Electrophotographic Processes

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 5, pp. 1004 - 1010

TEXT: The authors investigated polycrystalline ZnS which had been activated by Cu and Cl, and which showed electroluminescence. A voltage of 300 v was applied to the samples which were shaped in the form of tablets and bound with polystyrene. This was followed by ultraviolet irradiation (320-500 mμ) of varying duration by means of a VRK-4 (PRK-4) lamp. The experimental apparatus and the measuring techniques are described in Ref. 1. Measurements were carried out of the short-circuit current of the photoelectret and its depolarization by repeated exposure. Fig. 1 shows the decrease of the dark polarization at 300 v, which was at first rapid and then slow, of photopolarization, and of total polarization. The course taken by the curves is explained by localization of

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the electrons on low energy levels. Fig. 2 shows the dependence of polarization on the field voltage, and Fig. 3 the dependence of the charging of ZnS on the radiation energy. With a maximum radiation energy of 400.10^{-6} w/cm^2 an exposure of 2.10^{-3} sec is sufficient to cause a noticeable photopolarization. As may be seen from Fig. 4, the dependence of photopolarization on the time of exposure does not follow an exponential law. Further experiments were carried out with ZnS, which was first exposed and then charged (Fig. 6). Also in this case, the law of interchangeability is maintained, but, as shown in Fig. 7, there is no exponential dependence. The authors produced electrophotographic layers from ZnS + ZnO (description in Ref. 7), which were exposed to the light of a mercury lamp through a negative. After polarization in the capacitor, the image could be made visible by means of an electrophotographic developer (Ref. 7). Electroluminescence is effected by depolarization in an alternating-current field, whereby the image becomes visible on the ZnS + ZnO layer. A. I. Delova and L. Ya. Mogilevskaya took part in the experiments. The authors thank Academician A. V. Shubnikov, Academician G. Nadshakov, and Professor V.P. Dshelepov

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The Photoelectric State in ZnS and Two New Electrophotographic Processes

S/181/60/002/05/37/041
B004/B056

for their interest in this investigation. There are 7 figures and 7 references: 6 Soviet and 1 British.

ASSOCIATION: Institut kristallografii AN SSSR, Moskva (Institute of Crystallography of the AS USSR, Moscow)

SUBMITTED: May 15, 1959

Card 3/3

S/077/60/005/003/003/009
E032/E414

AUTHORS: Golovin, B.M., Zheludev, I.S., Kashukeyev, N.T. Fridkin, V.M. and Antonov, A.

TITLE: Electrophotography of Proton Beams

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1960, Vol.5, No.3, pp.207-208 + 1 plate

TEXT: A study is reported of the sensitivity of various electrophotographic layers to fast protons. The experiments were carried out on the synchrocyclotron of the Joint Institute for Nuclear Studies. The maximum intensity of the proton beam was about 10^8 protons/cm^2/sec and the energy of the protons was 680 Mev. Various electrophotographic layers were investigated, including ZnO, ZnS, CdS and polycrystalline sulphur, all deposited on paper. The electrophotographic layers were prepared by the method described in a previous paper (Ref.1). The layers were negatively charged by a corona discharge in air. The charged layers were then placed in a special holder which was fixed to the collimator with its plane perpendicular to the beam. After the exposure had been carried out the image was developed using a liquid electrophotographic developer described by two of the present authors in Ref.2. Dry

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Electrophotography of Proton Beams

developers (Ref.1) were used in the case of the sulphur layers. Fig.1 shows four electrophotographic images of the proton beam obtained in the ZnO layer with the beam in various angular positions relative to the axis of the collimator. As can be seen, these photographs can be used in the adjustment of the position of the proton beam. The electrophotographs shown in Fig.1 have a non-uniform background which is due to an edge effect associated with the electrostatic nature of the latent electrophotographic image. These edge effects can be reduced with the aid of a suitable screen. Fig.2 shows the photographs obtained with and without the screen (a and b respectively). It was found that electrophotographic layers of ZnO and polycrystalline sulphur are the most sensitive to protons. With maximum intensity of the proton beam, the minimum exposure time at 680 Mev was found to be 5 to 10 sec. It was found that the ZnO film has a similar characteristic curve to an X-ray film. The electrophotographic layer has a higher contrast but the latitude is smaller than in the case of the X-ray film. It follows that small irregularities in the beam are better defined in the electrophotographic method. Acknowledgments are expressed

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S/077/60/005/003/003/009
E032/E414

Electrophotography of Proton Beams

to V.P.Dzhelepov, Academician G.S.Nadzhakov and Academician A.V.Shubnikov for their interest. There are 4 figures and 2 Soviet references.

ASSOCIATIONS: Institut kristallografii AN SSSR (Institute of Crystallography AS USSR)
Institut fiziki Bolgarskoy AN (Institute of Physics of the Bulgarian AS)
Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Studies)

SUBMITTED: July 11, 1959

Card 3/3

Golovin, B. M.

82036
S/056/60/038/02/58/061
B006/B014

24.6900

AUTHORS: Amaglobeli, N. S., Golovin, B. M., Kazarinov, Yu. M., Nadyozhin, S. V., Polivy, N. M.

TITLE: Determination of the Coupling Constant of Pion - Nucleon Interaction From the Cross Section of Elastic Neutron Scattering by Protons at an Energy of 630 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 2, pp. 660-662

TEXT: In a previous article (Ref. 1) the authors used the differential elastic np-collision cross sections $\sigma_{np}(\vartheta)$ at E_n = 630 Mev in the angular range $160^\circ \leq \vartheta \leq 180^\circ$(c.m.s.) for the purpose of determining the coupling constant f^2 by Chew's method: $x^2\sigma_{np}(\vartheta) = A + Bx + Cx^2 + \ldots$ $\ldots + dx^m$ with $x^2 = (1+\mu^2/2k^2+\cos\vartheta)^2$, where μ is the pion mass and k the nucleon momentum. In this expansion, the coefficient A is directly expressed by f^2. In order to approach the experimental cross-section

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Determination of the Coupling Constant of Pion - Nucleon Interaction From the Cross Section of Elastic Neutron Scattering by Protons at an Energy of 630 Mev

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values by the function $x^2\sigma_{np}(\vartheta)$, the authors used a series of experimental functions, ranging from linear to parabolic functions of the fourth order. The use of polynomials higher than of the fourth degree would have been inadequate because the number of the points $x^2\sigma_{np}(\vartheta)$ was small. The most probable values were found to be $f^2 = 0.04$ and $f^2 = 0.085$; however, their choice was not possible in view of the low statistical accuracy and the small number of points. The mean value was $f^2 = 0.06 \pm 0.02$. In order to increase accuracy and to obtain more experimental points, the authors made further measurements within the same angular range by two methods, i.e., the method of the ring scatterer (Ref. 3) and by means of an ordinary detector which recorded the recoil protons. The two methods are briefly described. The number of points on the $\sigma_{np}(\vartheta)$ curve was doubled (10 points) by these measurements. However, also in this case it would have been useless to use terms

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Determination of the Coupling Constant of Pion - Nucleon Interaction From the Cross Section of Elastic Neutron Scattering by Protons at an Energy of 630 Mev

with $n > 4$ because these terms are small compared to the error of more than 100%. The authors then obtained the value $f^2 = 0.04 \pm 0.005$. A value of $f^2 = 0.04 \pm 0.015$ was suggested at the International Conference on High-energy Physics (Kiyev, 1959). Conclusion: np-scattering data supplied by Chew's method yield a value of f^2 that is somewhat smaller than the one obtained from np-scattering experiments (0.08). The authors thank Yu. N. Simonov for his assistance, S. N. Sokolov and T. P. Kochkina for their calculations and discussions. There are 4 references: 2 Soviet and 2 American.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Institut fiziki Akademii nauk Gruzinskoy SSR (Physics Institute of the Academy of Sciences, Gruzinskaya SSR)

SUBMITTED: November 17, 1959

Card 3/3

GOLOVIN, B.M.; KASHUKEYEV, M.T.; ORLOV, I.N.; FRIDKIN, V.M.

Photoelectric state in zinc sulfide and two new electrophotographic processes. Fiz. tver. tela 2 no.5:1004-1010 My '60.
(MIRA 13:10)

1. Institut kristallografii AN SSSR, Moskva.
(Zinc sulfide) (Photoelectricity)

GOLOVIN, B.M.

Vsesoyuznaya konferentsiya po fizike dielektrikov 2d 1958

Fizika dielektrikov, trudy vtoroy vsesoyuznoy konferentsii (Physics of Dielectrics, Transactions of the 2d All-Union Conference on the Physics of Dielectrics) Moscow, Izd-vo AN SSSR, 1960. 532 p. Errata slip inserted. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Fizicheskiy institut imeni P.N. Lebedeva.

Ed. of Publishing House: Ye.L. Starokadomskaya; Tech. Ed.: I.N. Dorokhina. Editorial Board: (Resp. Ed.) G.I. Skanavi, Doctor of Physics and Mathematics (Deceased), and K.T. Filippova, Candidate of Physics and Mathematics.

PURPOSE: This collection of reports is intended for scientists investigating the physics of dielectrics.

COVERAGE: The Second All-Union Conference on the Physics of Dielectrics held in Moscow at the Fizicheskiy institut imeni P.N. Lebedeva (Physics Institute imeni P.N. Lebedev) in November 1958 was attended by representatives of the principal scientific centers of the USSR and of several other countries. This collection contains most of the reports presented at the conference and summaries of the discussions which followed. The reports in this collection deal with dielectric properties, losses, and polarization, and with specific inductive capacitance of various crystals, chemical compounds, and ceramics. Photoelectrets, ferroelectric crystals, and various radiation and irradiation effects on dielectrics are investigated. The volume contains a list of other papers presented at the conference dealing with polarization, losses, and breakdowns of dielectrics, which were published in the journal Izvestiya AN SSSR, seriya fizicheskaya, No. 1 and 2, 1960. No personalities are mentioned. References accompany each report.

GOLOVIN, B.M.; ZUL'KARNEYEV, R.Ya.; NIKANOROV, V.I.; SAFAROV, V.I.

[Spin-orbital states of particles in elastic nucleon-deuteron scattering] Spinovye sostoianiia chastits pri uprugom nuklon-deitronnom rasseianii. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 196[illegible]. 15 p. (MIRA 15:2)
(Nuclear spin) (Scattering (Physics))

S/120/61/000/006/001/041
E032/E114

AUTHORS: Golovin, B.M., Osipenko, B.P., and Sidorov, A.I.

TITLE: Homogeneous crystal counters of nuclear radiations (A review)

PERIODICAL: Pribory i tekhnika eksperimenta, no.6, 1961, 5-13

TEXT: The authors give an account of the history, the principal characteristics and some of the applications of homogeneous crystal (conduction) counters. The paper begins with a brief qualitative account of the physical principles of crystal counters. This is followed by a section on the formation of pulses in dielectric counters. The paper is concluded with a list of possible materials for conduction counters and gives a brief summary of their properties (halides, diamond, cadmium sulphide, silicon, zinc sulphide, liquid and solid argon). All the information reviewed in this paper is available in published literature.
There are 5 figures and 53 references: 9 Soviet-bloc and 44 non-Soviet-bloc. The four most recent English language references read as follows:
Card 1/2

Homogeneous crystal counters ... S/120/61/000/006/001/041
E032/E114

Ref.29: W.F. Cotty, Diamond Rev., 1956, v.16, no.182, 12; no.183, 31; no.184, 54; no.186, 93; no.187, 114, 116; no.188, 133; no.190, 174.
Ref.31: K.W. Taylor, Proc.Phys.Soc. A, 1956, v.69, 593
Ref.35: A.H.B. Benny, F. Champion, Proc.Phys.Soc., A, 1956, v.234, 432.
Ref.46: I.D. Van Putten, I.C. Van der Velde, IRE Trans. Nucl Sci., 1960, NS-8, 124.

ASSOCIATION: Ob yedinennyy institut yadernykh issledo anny
(Joint Institute for Nuclear Research)

SUBMITTED: September 14, 1961

Card 2/2

22035
S/181/61/003/004/001/030
B102/214

9,4300 (1150, 1151, 1143)

AUTHORS: Mil'vidskiy, M. G. and Golovin, B. I.

TITLE: The form of the crystallization front of single crystals of semiconductors bred from a melt by the method of Chokhral'skiy

PERIODICAL: Fizika tverdogo tela, v. 3, no. 4, 1961, 1015-1018

TEXT: The form of the boundary between crystal and melt depends essentially on the thermal conditions on the crystallization front. Since a curvature of the crystallization front causes thermal stresses leading to increasing dislocation density and also causing a nonuniform distribution of the impurities, it is important for the preparation of semiconductor crystals to work under such conditions as ensure a plane crystallization front. Only if the crystallization front is plane, the structure will be perfect and the properties homogeneous. The most important factors affecting the form of the front are the removal of heat through the crystal and the melt, and the release of the latent heat of fusion. One of the possibilities of influencing the crystallization front in a desired manner (for example, to obtain a plane front) consists in a programming of the [illegible] growth of

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S/181/61/003/0[illegible]/050
B102/B214

The form of the...

the crystal. Under simple assumptions, the rate of growth v_1 guaranteeing a plane crystallization front is given by the relation $v_1 = v \pm S/A$ (the minus sign holds for a concave front). The quantity S/A has the dimension of a velocity and can be used for the estimation of the curvature of the front: it is called the "relative front curvature" (A is the cross-sectional area of the crystal rod, S is the volume of the spherical segment melting per unit time on account of the release of the latent heat of fusion). To obtain a plane crystallization front experimentally, the authors have carried out a programming of the pulling rate. The experimental apparatus is shown schematically in Fig. 2. Silicon crystals were grown in a vacuum from a melt contained in a quartz crucible. The charge was 60-70 g, the speed of the crucible with the melt was 6 rpm, and that of the priming device 5 rpm. The form of the front was found out by two independent methods. The following results were obtained: In a crucible of 48 mm diameter, the relative front curvature is not affected by a change of the rod diameter between 13 and 28 mm. At a pulling rate of 1.2 mm/min, the crystallization front is convex; its curvature decreases with decreasing level of the melt in the crucible. On detaching the rod from the melt a plane front is obtained. The effect of the pulling rate

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The form of the...

on the front form was accurately investigated in the range of 0.07-2.6 mm/min. If the rate is changed from 0.07 to 2 mm/min, the curvature of the front will decrease; at 2.6 mm/min, the sign of the curvature will change - from convex the front becomes concave. For different levels of the melt, $v = f(S/A)$ is represented graphically. The optimum pulling rate can be determined from the obtained family of straight lines intersecting the two axes. The results agree well with the formula given at the beginning. There are 5 figures and 3 references. The most important reference to the English-language publication reads as follows: J. Wilks, Proc. Inst. Elektr. Engin. 106, part B, 1959.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti Moskva (State Scientific Research and Planning Institute for the Rare-metal Industry, Moscow)

SUBMITTED: April 12, 1960 (initially),
October 27, 1960 (after revision)

Card 3/4

GOLOVIN, B.M.; DZHELEPOV, V.P.; ZUL'KARNEYEV, R.Ya.

Correlation between the normal polarization components in 650 mev. proton-proton scattering. Part 1. Zhur.eksp.i teor.fiz. 41 no.1: 83-88 Jl '61. (MIRA 14:7)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Synchrotron) (Protons—Scattering)

GOLOVIN, B.M.; OSIPENKO, B.P.; SIDOROV, A.I.

Homogeneous crystal nuclear-radiation counters (survey).
Prib. i tekh.eksp. 6 no.6:5-13 N-D '61. (MIRA 14:11)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Nuclear counters)

GOLOVIN, B. M., MESHCHERYAKOV, V. P., SUL'KARNEYEV, R. Ya.

"Correlation of the Normal Components of pp-Scattering Polarization at 650 Mev. II"

report presented at Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Joint Inst. for Nuclear Research
Lab. of Nuclear Problems

GOLOVIN, B.M.; ZUL'KARNEYEV, R.Ya.; NIKANOROV, V.I.; SATAROV, V.I.; SARANTSEVA, V.R., tekhn. red.

[On the reduction of NN-scattering amplitudes in T=0 states] O vosstanovlenii amplitudy NN -rasseianiia v sostoianiiakh T=0. Dubna, Ob"edinenyi in-t iadernykh issledovanii, 1962. 8 p. (MIRA 15:12)

(Nucleons--Scattering)

GOLOVIN, B.M.; LANDSMAN, A.P.; GRIGOR'YEVA, G.M.; OSIPENKO, V.P.; SARANTSEVA, V.R., tekhn. red.

[Effects of high-energy protons on silicon phototubes] Deistvie protonov vysokoi energii na kremnievye fotoelementy. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1963. 26 p. (MIRA 16:6)

(Protons) (Photoelectric cells)

GOLOVIN, B.M.; GRIGOR'YEVA, G.M.; LANDSMAN, A.P.; OSIPENKO, B.P.

Effect of high-energy protons on silicon photocells. Kosm. issl. 1 no.2:271-286 S-O '63. (MIRA 17:4)

S/056/63/044/001/027/067
B104/B144

AUTHORS: Golovin, B. M., Dzhelepov, V. P., Zul'karneyev, R. Ya., Ts'ui Wa-ch'uang

TITLE: Angular dependence of the polarization correlation C_{nn} and reconstruction of the amplitude moduli for pp scattering at 640 Mev. Estimation of the singlet phases. II

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 142-147

TEXT: This is the second report on studies to determine the nucleon-nucleon scattering matrix at 640 Mev. The experiments are carried out on the synchrocyclotron of the OIYaI following a certain program concerning np and pp scattering. In the first part the correlation C_{nn} was determined for normal polarizations in the c.m.s. for 90°. In the present paper C_{nn} is determined for 54° (108°) and 72° (126°). A 640 Mev proton beam was formed by a quadrupole lens and two collimators so as to hit the first target, a cylindrical container of liquid hydrogen, with a beam

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Angular dependence of the ...

density of (3-3.5)·10^8 cm^2/sec. Protons elastically scattered on the first target fell through a slit onto analyzer targets and were detected by counters. The amplitude of elastic pp scattering is represented in the form

$$M = \frac{1}{2}\{(a+b)+(a-b)(\sigma_1 n)(\sigma_2 n)+e(\sigma_1+\sigma_2)n+(c+d)(\sigma_1 m)(\sigma_2 m)+ + (c-d)(\sigma_1 l)(\sigma_2 l)\}. \quad (1)$$

according to R.Oehme (Phys.Rev., 98, 147, 1955). M is measured experimentally in this representation, the other parameters are described by the following relations:

$$\overline{\sigma(\theta)} = \frac{1}{2}(|a|^2+|b|^2+|c|^2+|d|^2+|e|^2), \quad P(\theta') = \frac{\mathrm{Re}\, ae^*}{\sigma(\theta)},$$

$$C_{nn} = \frac{1}{2\sigma(\theta)}(|a|^2-|b|^2-|c|^2+|d|^2+|e|^2),$$

$$D(\theta) = \frac{1}{2\sigma(\theta)}(|a|^2+|b|^2-|c|^2-|d|^2+|e|^2);$$

$$K(\theta) = \frac{1}{2\sigma(\theta)}(|a|^2-|b|^2+|c|^2-|d|^2+|e|^2).$$

These relations and the experimental data are used to find the results

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Angular dependence of the ...

given in Table 3. $|M_{ss}(54^\circ)| = (0.40\pm0.07)\cdot10^{-13}$ cm is found for the scattering amplitude. This value gives a singlet scattering cross section of $\sigma_s(54^\circ) = (0.4\pm0.14)\cdot10^{-27}$ cm^2. The pp scattering cross section in the triplet state is $\sigma_{tr}(54^\circ) = (3.3\pm0.2)\cdot10^{-27}$ cm^2. The contribution of singlet scattering to the total scattering cross section increases considerably with a decrease of the scattering angle from 90° to 54°. There are 1 figure and 4 tables.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: August 23, 1962

$\theta_{c.m.}$, deg	$\frac{\lvert a\rvert^2+\lvert c\rvert^2}{2\sigma(\theta)}$	$\frac{\lvert b\rvert^2}{2\sigma(\theta)}$	$\frac{\lvert c\rvert^2}{2\sigma(\theta)}$	$\frac{\lvert d\rvert^2}{2\sigma(\theta)}$	$\frac{\lvert a-c\rvert^2}{2\sigma(\theta)}$
54	0,78±0,09	0,21±0,08	0,00±0,06	0,00±0,06	0,42±0,09
72	0,66±0,07	0,19±0,07	−0,02±0,07	0,17±0,07	0,53±0,07
90	0,95±0,06	0,02±0,05	0,02±0,05	0,02±0,06	0,95±0,08
108	0,66±0,07	−0,02±0,08	0,19±0,09	0,17±0,07	0,79±0,07
126	0,78±0,09	0,00±0,07	0,21±0,07	0,00±0,09	1,14±0,09

Card 3/3

L 2662-66
ACCESSION NR: AP5021368

UR/0120/65/000/004/0206/0212
621.382

AUTHOR: Vasilev, V. S.; Golovin, E. M.; Osipenko, B. P.; Chervonko, A.

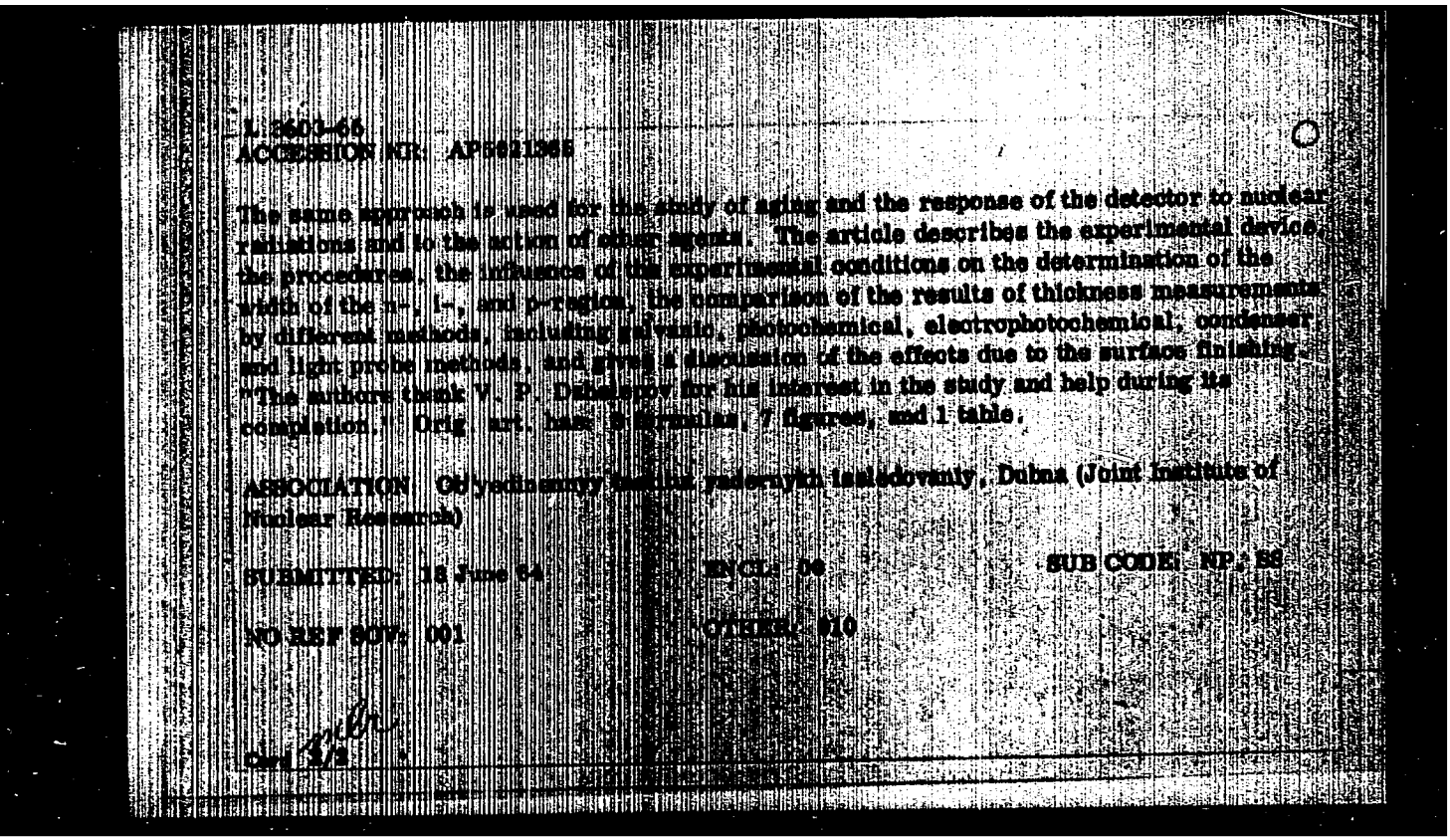
TITLE: The use of light probes for the study of the structure of semiconductor detectors

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 206-212

TOPIC TAGS: semiconductor device, semiconductor research, semiconductor band structure

ABSTRACT: Silicon n-i-p-structure detectors are used extensively for the registration and spectroscopy of nuclear particles with extended path length. It had been shown earlier that during the displacement of a light spot along a line cutting through the n-p germanium transition, the photo emf (or photo current) depend in a definite way on the position of the spot. This effect has been used to measure the lifetimes (diffusion lengths) of the non-equilibrated carriers within the p- and n-regions of germanium. The present paper develops a method for the study of the structure and the determination of the width of the sensitive region from the photocurrent variations as a function of the light spot position.

Card 1/2



L 2603-66
ACCESSION NR: AP5021265

The same approach is used for the study of aging and the response of the detector to nuclear radiations and to the action of other agents. The article describes the experimental device, the procedures, the influence of the experimental conditions on the determination of the width of the n-, i-, and p-region, the comparison of the results of thickness measurements by different methods, including galvanic, photochemical, electrophotochemical, condenser, and light probe methods, and gives a discussion of the effects due to the surface finishing. "The author thank V. P. Dzhelepov for his interest in the study and help during its completion." Orig. art. has: 9 formulas, 7 figures, and 1 table.

ASSOCIATION: Obyedinennyy institut yadernykh issledovaniy, Dubna (Joint Institute of Nuclear Research)

SUBMITTED: 18 June 64 ENCL: 00 SUB CODE: NP, EC

NO REF SOV: 001 OTHER: 010

Card 2/2

ACC NR: AP7012413

SOURCE CODE: UR/0367/67/005/001/0146/0149

AUTHOR: Golovin, B. M.; Zul'karneyev, R. Ya.--Zulkarneev, R. Ya.; Kiselev, V. S.; Medved', S. V.--Medved, S. V.; Nikanorov, V. I. Pisarev, A. P.; Semashko, G. L.

ORG: Joint Institute for Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

TITLE: Spin correlation during elastic scattering of polarized 605 MEV protons on protons

SOURCE: Yadernaya fizika, v. 5, no. 1, 1967, 146-149

TOPIC TAGS: elastic scattering, nuclear spin, proton beam, spark chamber, scintillation counter

SUB CODE: 20

ABSTRACT: The spin correlation coefficients in elastic pp-scattering were measured at 90° c.m.s., using a polarized 605 MeV proton beam. Spark chambers controlled by scintillation counters were used in the measurements. The following values of the coefficients were determined: $C_{nn} = 0.56 \pm 0.18$ C_K P = 0.27 ± 0.18, C_Q K n = 0.92 ± 0.38. The authors thank S. M. Bilen'kiy, V. P. Dzholepov, L. I. Lapidus, R. M. Ryndin, G. D. Stoletov and A. A. Tyapkin for discussion of the questions which arose during the work and also R. I. Zaplatina, L. A. Lebedeva, M. Ya. Uglirsheva, V. V. Ukleykina, and N. P. Yushkevich

Card 1/2

0932 1346

ACC NR: AP7012413

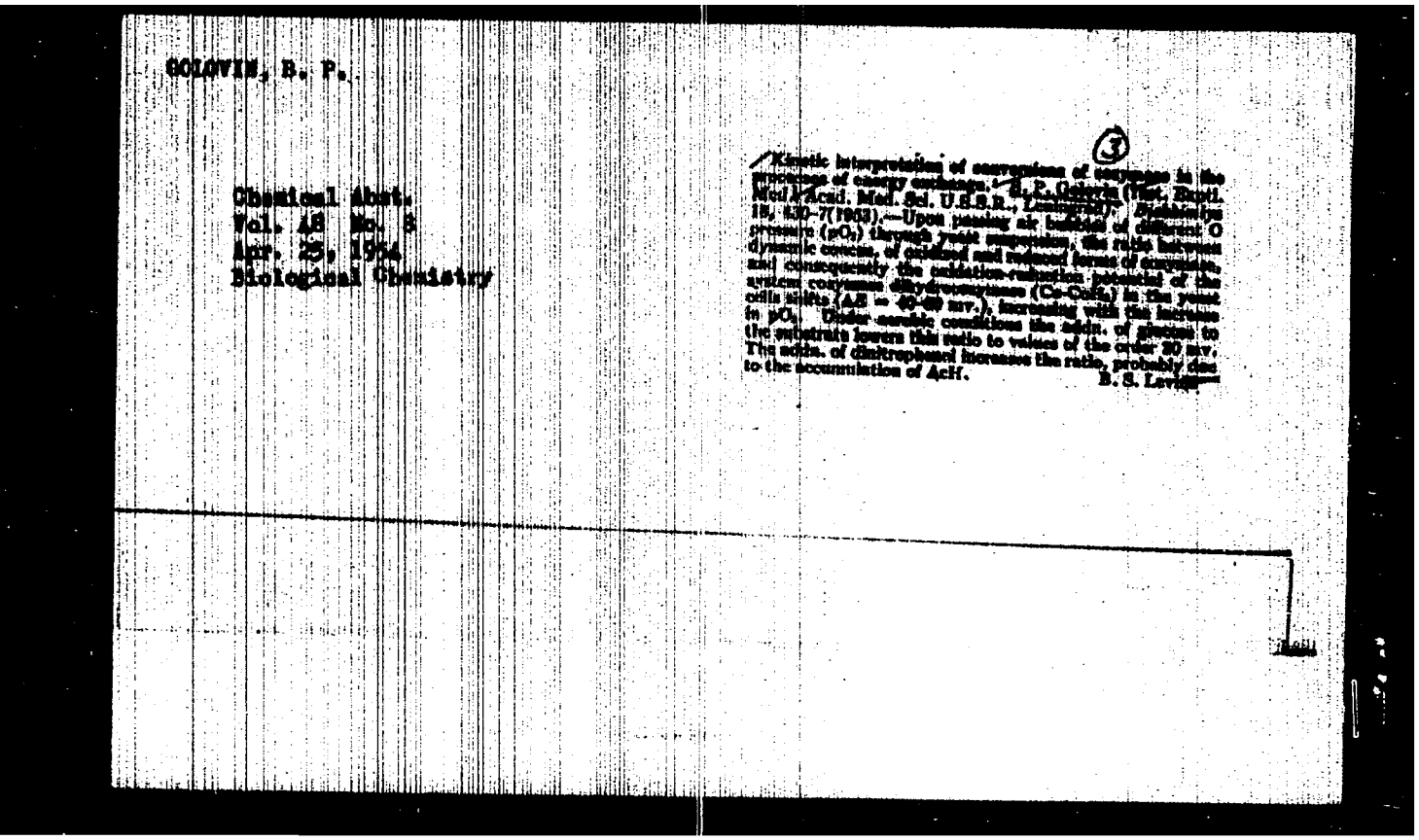
for examining the photoplates. Orig. art. has: 1 figure and 4 formulas.
[Based on authors' Eng. Abst.] [JPRS: 40,393]

2/2

GOLOVIN, B.P.

Probable phosphorilization of myosin. Biokhimiia, Moskva 16 no.2: 156-163 Mar-Apr 1951. (CLML 20:7)

1. Department of Biochemistry, Institute of Experimental Medicine Leningrad.



GOLOVIN, B. P.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Biological Chemistry

(3)

Kinetic interpretation of energetics of isotopes in the processes of energy exchange. I. B. P. Golovin (Mil. Biol. Med. Acad. Med. Sci. U.S.S.R., Leningrad). Biokhimiya 18, 430-7(1953).—Upon passing air bubbles of different O pressure (pO_2) through yeast suspension, the ratio between dynamic concns. of oxidized and reduced forms of coenzyme and consequently the oxidation-reduction potential of the system cozymase dehydrogenases (Co_1-Co_2H) in the yeast cells shifts (Δε = 40-60 mv.), increasing with the increase in pO_2. Under aerobic conditions the addn. of glucose to the substrate lowers this ratio to values of the order 20 mv. The addn. of dinitrophenol increases the ratio, probably due to the accumulation of Co_2H.

B. S. Levine

SOLOVIE, I. P.

"Variations in the Coenzymes (Cozymase and Adenylic System) During Various Functional Conditions of the Tissues." Cand Biol Sci, Inst of Experimental Medicine, Acad Med Sci USSR, Leningrad, 1954. (RZhBiol, No 6, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

USSR / General Problems of Pathology. Tumors. U
Metabolism.

Abs Jour: Ref Zhur-Biol., No 22, 1958, 102534.

Author : Golovin, B. P.
Inst : Yezhegodnik Institute of Experimental Medicine, AMS, USSR.
Title : On Peculiarities of the Metabolism of Nucleic Acids in Tumor Tissue.

Orig Pub: Yezhegodnik. In-t eksperim. med. Akad. med. nauk SSR, 1955, L., 1956, 219-222.

Abstract: To mice with ascitic carcinoma of Ehrlich, glucose-C^{14} was introduced; after 6 hours, preparations were isolated from liver and tumor cells which contained ribonucleinic and desoxyribonucleic acids. Inclusion in the fraction of RNA and DNA was the

Card 1/2

GOLOVIN, B.P.; SYTINSKAYA, O.N.

Steroid hormones and the activity of renal hexokinase. Vop.med.khim. 5 no.5:348-352 S-O '59. (MIRA 13:2)

1. Institute of Experimental Medicine of the U.S.S.R. Academy of Medical Sciences, Leningrad.
(KINASES metab.)
(KIDNEYS metab.)
(STEROIDS pharmacol.)

GOLOVIN, B.P.; SYTINSKAYA, O.N.

Influence of hormones on the hexokinase activity of subcellular renal structures in the rabbit. Vop. med. khim. 7 no.5:492-494 S-O '61. (MIRA 14:10)

1. The Department of Biochemistry of the Institute of Experimental Medicine of the Academy of Medical Sciences of the U.S.S.R.
(KIDNEYS) (HEXOKINASE) (HORMONES)

GOLOVIN, B.V. [Holovin, B.V.], inshener-mekhanik

New tillage implements for medium-powered tractors. Mekh. sil'. hosp. 11 no.5:29-30 My '60. (MIRA 14:3)
(Agricultural implements)

SAMOYLOV, M.A.; TIMKO, V.V.; GOLOVIN, B.V.

Universal truck loader. Trakt.i sel'khozmash. 31 no.8:41-42 Ag '61. (MIRA 14:7)

(Motortrucks)

GOLOVIN, D., inzhener-polkovnik.

Special features of the repair and maintenance of heavy tanks. Tanklet no.5:43-45 My '56. (MIRA 11:3)
(Tanks (Military science)--Maintenance and repair)

SOV/110-58-8-5/26

AUTHORS: Golowin, D.A. and Mustafova, N.N. (Engineers)

TITLE: The Action of Fungus on Materials used in Electrical Equipment for Tropical Service (Deystviye plesnevykh gribov v tropicheskikh usloviyakh na materialy, primenyayemyye v elektroapparatostroyenii)

PERIODICAL: Vestnik Elektropromyshlennosti,1958,Nr 8,pp 12-19 (USSR)

ABSTRACT: Published data about fungus action on electrical equipment under tropical conditions are reviewed. The article then describes tests of the resistance to fungus of various materials used in the manufacture of Soviet electrical equipment. The test pieces, after being maintained at 60°C for four hours, were sprayed with an aqueous suspension of spores of ten types of fungi mixed together and then subjected to a humidity of 95 - 100% at a temperature of 30°C for three months. Altogether 350 samples were tested. Their deterioration was assessed visually by lens and microscope; the meaning of the various terms used to describe the amount of fungus growth is explained. The results of the tests are given in Tables 1 - 4. Table 1 relates to various enamels and priming coats, and shows

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The Action of Fungus on Materials used in Electrical Equipment for Tropical Service

considerable variation from one material to another. The enamels are identified only by code letters and numbers, but the standards with which they comply are also stated. Tests were also made on the resistance to fungus of various impregnating varnishes for transformers and air-break switchgear. The influence of talc and glyptal resin and of various grades of varnish containing fungicide was also tested, with the results given in Table 2. It was found that in some cases the presence of talc promoted fungus growth. Because plastics are widely used in electrical equipment and some are easily attacked by fungus, a number of them were tested. The results appear in Table 3. A particularly careful study was made of plastic K-18-3T. Parts and press powder for test were obtained from various places but all were seriously attacked, as will be seen from Figs 3 and 4. On the other hand, plastic K-211-3T was particularly resistant to attack. Of the insulating materials tested, the following resisted fungus attack: glass-textolite of three grades, organic

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SOV/110-58-8-5/26

The Action of Fungus on Materials used in Electrical Equipment for Tropical Service

glass, vinyplast, aminoplast, polystyrol, transformer oil, glass thread, epoxy resin with quartz filler, flexible micanite and various types of insulated wire. Several of the lubricants tested were found to be only slightly attacked.

There are 5 figures, 4 tables and 8 references, 2 of which are Soviet and 6 English.

SUBMITTED: February 7, 1958

1. Electrical equipment--Fungus deterioration 2. Fungicides--Effectiveness

Card 3/3

GOLOVIN, D. B., Engineer

"Propagation of Lower Type Waves in Certain Radio Wave Guides." Thesis for degree of Cand. Technical Sci. Sub 28 Dec 50, Moscow Electrical Engineering Inst of Communications

Summary 71, 4 Sep 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva. Jan-Dec 1950.

GOLOVIN, D.D., kand.tekhn.nauk, dotsent

Bases for selecting parameters for the cutter bars of harvesting machinery. Nauch. zap. KHIMSKH no.11 Pak. mekh. sel'khoz. 1:17-26 '58. (MIRA 14:3)
(Harvesting machinery)

BULANENKO, F.M.; kand.tekhn.nauk, dotsent; GOLOVIN, D.D., kand.tekhn.nauk, dotsent

Results obtained from investigating the performance of SKG-4 potato planters under field conditions. Nauch.zap. KHIMSKH no.11 Fak. mekh. sel'khoz. 1:63-75 '58. (MIRA 14:3)
(Planters(Agricultural machinery))

NASTENKO, Nikolay Nikolayevich; BOROSHOK, Lev Abramovich; DVORCVENKO, G.P., kand. tekhn. nauk, retsenzent; GOLOVIN, D.D., retsenzent; PILIPENKO, Yu.P., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Automation of production processes in agriculture] Avtomatizatsiia proizvodstvennykh protsessov v sel'skom khoziaistve. Moskva, Mashgiz, 1963. 194 p. (MIRA 16:7)
(Automation) (Agricultural machinery)

GOLOVIN, D. I.

Breast - Diseases; Epithelium

Inflammatory growth of the mammary epithelium Arkhiv pat. 14 No. 1, 1952 Leningrad: Iz Kafedry Patologicheskoy (Zav. - Deystv. chlen AMN SSSR Prof. V. G. Garshin) Leningradskogo Meditsinskogo Instituta im. Akad. I. P. Pavlova

Monthly List of Russian Accessions, Library of Congress, June 1952. UNCLASSIFIED
rcd. 17 Dec. 1951

GOLOVIN, D. I.

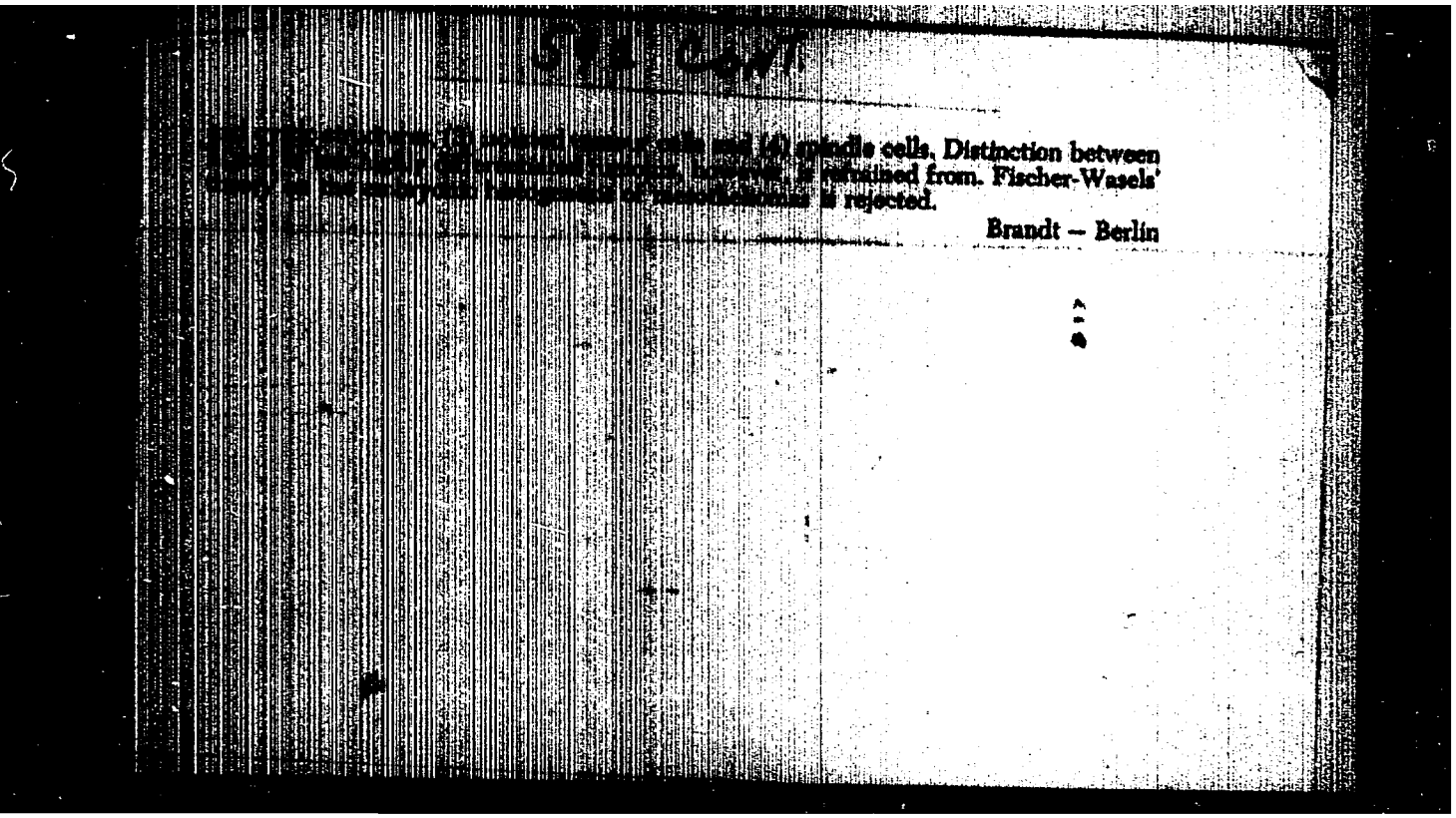
"On the Metaplasia of Epithelia." Dr Med Sci, First Leningrad Medical Inst, Leningrad, 1953. (RZhBiol, No 8, Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556 24 Jun 55

GOLOVIN, D.I.

Excerpta Medica Sec 16 Cancer Vol. 2/2 Feb 5[illegible]

592. GOLOVIN D. I. [illegible] Leningrad [illegible] Inst. [illegible] of [illegible] serous [illegible] [illegible] (Mosk.) 1953, 15/2 (38-[illegible]) [illegible]
On the basis of 50 cases [illegible] personal observations [illegible] that in tumours morphological [illegible] may be found similar [illegible] in inflammatory processes, viz. (1) [illegible] and alveolar structures, (2) [illegible]



...spindle cells. Distinction between ...obtained from. Fischer-Wasels' ... rejected.

Brandt – Berlin

GLAZUNOV, M.F., chlen-korrespondent Akademii meditsinskikh nauk SSSR, predsedatel' obshchestva; GOLOVIN, D.I., dotsent, otvetstvennyy sekretar'.

At the Leningrad Scientific Society of Pathologists. Arkh.pat. 15 no.3:85-87 My-Je '53. (MLRA 6:11)

1. Akademiya meditsinskikh nauk SSSR (for Glazunov). 2. Leningradskoye nauchnoye obshchestvo patologov.
(Leningrad--Pathology--Societies) (Societies--Pathology--Leningrad)

GOLOVIN, Dmitriy Ivanovich.

Kishinev State Med Inst, Academic degree of Doctor of Med Sci, based on his defense, 14, January 1954, in the Council of the Military-Naval Med Acad, of his dissertation entitled: "About the Metaplasia of Epitheliums".

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no 8, 2 April 55, Byulleten' MVO SSSR, No.14, July Moscow pp 4-22, Uncl.
JPRS/NY-429

GOLOVIN, D.I.

Inflammatory proliferation of the epithelium of the urinary bladder produced by tar. Arkh.pat. 16 no.4:77 O-D '54(MLRA 8:10)
(BLADDER, diseases,
exper.inflamm.proliferation of epithelium caused by tar)
(TAR, effects,
exper.epithelial inflamm. proliferation of bladder)

AS

USSR/Human and Animal Morphology. Skin S-4

Abs Jour : Ref Zhur - Biol., No 7, 1958, No 31352

Author : Gelevin D.I.
Inst : Not Given
Title : On the Morphogenesis of the Changes of the Epithelia During Avitaminosis A.

Orig Pub : Arkhiv patologii, 1956, 18, No 1, 102-103

Abstract : Primary metaplastic changes of the epithelium during avitaminosis A are revelwed by the author as an independent type of pathological development of the epithelial tissues beyond connection with regeneration and inflammation.

Card : 1/1

GOLOVIN, D.I.

[Autopsy; method of complete evisceration] Vskrytie trupov; metod polnoi evistseratsii. Kishinev, Gos. izd-vo Moldavii, 1957. 110 p. (MIRA 11:6)

(AUTOPSY)

B

USSR / General Biology. General Histology.

Abs Jour: Ref Zhur-Biol., No 23, 1958, No 103253.

Author : Golovin, D. I.
Inst : Not given.
Title : The Problem of Epithelial Tissue Metaplasia.

Orig Pub: Arkhiv patologii, 1957, 19, No 3, 15-25.

Abstract: Two contradictory properties are distinguished in epithelial tissues--determination and plasticity. Conservatism is responsible for tissue determination; variability, for tissue plasticity. Tissue plasticity provides the opportunity for various transformations which belong among the acts of adaptive significance. Although they represent a dialectic unity, determination and plasticity always are in an inverse relationship. It is best shown under pathological conditions of growth and develop-

Card 1/2

GOLOVIN, Dmitriy Ivanovich

[Metaplasia of the epithelium] O metaplazii epiteliev. Moskva, Medgiz, 1958. 97 p. (MIRA 12:3)
(EPITHELIUM) (METAPLASIA)

GOLOVIN, Dmitriy Ivanovich

[Epithelial tumors of the skin; classification, histology, and histogenesis] Epitelial'nye opukholi kozhi; klassifikatsiia, gistologiia, gistogenez. Kishinev, Gos.izd-vo Moldavii, 1958. 150 p. (MIRA 13:12)

(SKIN--TUMORS)

ZIDRASHKO, T.M.; GOLOVIN, D.I.

Effect of the uranium nitrate on the thyroid of white rats under chronic experimental conditions. Arkh. anat., gist. i embr. 44 no.5:63-67 My '63. (MIRA 17:6)

1. Kafedra gistologii (zav.-dotsent L.F. Tyurina) Ternopol'skogo meditsinskogo instituta i kafedra gigyeny (zav.-dotsent D.I. Golovin) Chernovitskogo meditsinskogo instituta. Adres avtorov: Ternopol', Teatral'naya pl.,2, Gosudarstvennyy meditsinskiy institut, Kafedra gistologii.

GOLOVIN, K.I., inzh.

Assembly of metal ventilation pipes 120 meters high. Mont. i spets. rab. v stroi. 24 no.5:3-4 My '62. (MIRA 15:5)

1. Proyektnaya kontora tresta Sibstal'konstruktsiya. (Ventilation) (Pipe, Steel)

GOLOVIN, N. I., inzh.

Assembly of bridges for pneumatic conveying in close quarters.
Mont. i spets. rab. v stroi. 25 no.3:13-15 Mr '63. (MIRA 16:2)

1. Proyektno-konstruktorskaya kontora tresta Sibetal'konstruktsiya.
(Pneumatic conveying--Equipment and supplies)
(Alumina--Transportation)

GOLOVIN, P.I.

Fluorine in the Matsesta waters. Gidrokhim. mat. 23:70-73 '55.

1.Gosudarstvennyy nauchno-issledovatel'skiy bal'neologicheskiy institut imeni I.V.Stalina na kurorte Sochi-Matsesta.
(Matsesta--Fluorine) (MLRA 9:2)

GOLOVIN, F.I., Cand Chem Sci—(diss) "The thermodynamic constant of the first stage of dissociation of hydrosulfuric acid in water at various temperatures." Novocherkassk, 1958. 27 pp with graphs (Acad Sci USSR, Hydrochemical Inst), 200 copies. List of author's works, pp 26-27 (11 ,49-58, 120)